Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An exposure apparatus for transferring a pattern of a mask onto a workpiece, comprising:

a light source;

an illumination optical system, which illuminates said mask, arranged in an illumination optical path between said light source and said mask and comprising a pupil shape forming unit which forms four substantially planar light sources at a predetermined plane orthogonal to the illumination optical path in the vicinity of ~~the~~ a pupil thereof,

wherein said four planar light sources are arranged substantially at each ~~substantial~~ of vertices of a narrow rectangle whose barycenter is located on ~~the~~ an optical axis of the illumination optical path so as to adjust a resist pattern to be transferred or a substrate pattern formed via a process to a predetermined size and a predetermined shape; and

a projection optical system arranged in an optical path between said mask and said workpiece.

2. (Currently Amended) The exposure apparatus according to claim 1, wherein said mask ~~is provided with an~~ has been corrected by optical proximity correction, and said pupil shape forming unit is capable of changing the shape of the narrow rectangle so as to further ~~correct~~ adjust at least one of ~~the~~ a longitudinal line width and a transverse line width of the resist pattern which is obtained from said mask ~~with~~ based on the optical proximity correction.

3. (Currently Amended) The exposure apparatus according to claim 1, wherein a ratio between a longer side and a shorter side of said rectangle is 1.1 or more.

4. (Currently Amended) The exposure apparatus according to claim 1, wherein each of said four substantially planar light sources has a circular shape.

5. (Original) The exposure apparatus according to claim 1, wherein said pupil shape forming unit has an aperture stop, disposed on the illumination optical path, that restricts a light beam passing therethrough.

6. (Original) The exposure apparatus according to claim 5, wherein said pupil shape forming unit has a plurality of aperture stops which are removable from and insertable in the illumination optical path.

7. (Original) The exposure apparatus according to claim 1, wherein said pupil shape forming unit has a diffractive optical element, disposed on the illumination optical path, which converts a light beam into a light beam with a predetermined cross section.

8. (Original) The exposure apparatus according to claim 7, wherein said pupil shape forming unit has a plurality of diffractive optical elements which are removable from and insertable in the illumination optical path.

9. (Currently Amended) An exposure apparatus for transferring a pattern of a mask having a chip pattern onto a workpiece, comprising:

a light source;

an illumination optical system, which illuminates said mask ~~with a plurality of chip patterns to be transferred~~, arranged in an illumination optical path between said light source and said mask and comprising a pupil shape forming unit which forms four substantially planar light sources at a predetermined plane orthogonal ~~to~~ to the illumination optical path in the vicinity of ~~the~~ a pupil thereof,

wherein said four planar light sources are arranged substantially at each ~~substantial~~ of vertices of a narrow rectangle whose barycenter is located on ~~the~~ an optical axis of the illumination optical path,

~~and~~ at least one of a longer side of said narrow rectangle and a shorter side of said narrow rectangle is set based on a longer direction of said chip pattern; and

a projection optical system, which projects and transfers the chip ~~patterns~~ pattern of the mask onto said workpiece, arranged in an optical path between said mask and said workpiece.

10. (Original) The exposure apparatus according to claim 9, wherein said pupil shape forming unit adjusts the four planar light sources so as to set a resist pattern to be transferred or a substrate pattern formed via a process to a predetermined size and a predetermined shape.

11. (Currently Amended) The exposure apparatus according to claim 9, wherein said mask has been corrected by optical proximity correction, and said pupil shape forming unit is capable of changing the shape of the narrow rectangle so as to further ~~correct~~ adjust at least one of ~~the~~ a longitudinal line width and a transverse line width of the resist pattern or the substrate pattern which is obtained from the mask ~~with~~ based on the optical proximity correction.

12. (Currently Amended) The exposure apparatus according to claim 9, wherein a ratio between the longer side and the shorter side of said rectangle is 1.1 or more.

13. (Currently Amended) The exposure apparatus according to claim 9, wherein each of said four substantially planar light sources has a circular shape.

14. (Original) The exposure apparatus according to claim 9, wherein said pupil shape forming unit has an aperture stop, disposed on the illumination optical path, which restricts a light beam passing therethrough.

15. (Original) The exposure apparatus according to claim 14, wherein said pupil shape forming unit has a plurality of aperture stops which are removable from and insertable in the illumination optical path.

16. (Original) The exposure apparatus according to claim 9, wherein said pupil shape forming unit has a diffractive optical element, disposed on the illumination optical path, which converts a light beam into a light beam with a predetermined cross section.

17. (Original) The exposure apparatus according to claim 16, wherein said pupil shape forming unit has a plurality of diffractive optical elements which are removable from and insertable in the illumination optical path.

18. (Currently Amended) A method of exposure comprising the steps of:

illuminating a mask ~~with~~ having a pattern to be transferred through an illumination optical system, ~~having a step~~ including the steps of:

forming four substantially planar light sources at a predetermined plane orthogonal to ~~the~~ an illumination optical path in the vicinity of ~~the~~ a pupil of the illumination optical system; and

adjusting the pattern projected onto the workpiece or a substrate pattern formed via a process ~~as~~ to a desired size and shape by arranging said four planar light sources substantially at each ~~substantial~~ of vertices of a narrow rectangle whose barycenter is located on an optical axis of the illumination optical path; and

projecting and transferring the pattern of the mask onto ~~a~~ the workpiece.

19. (Currently Amended) The method according to claim 18, wherein the mask ~~is provided with an~~ has been corrected by optical proximity correction, and the method further ~~comprising~~ comprises a step of changing the shape of said narrow rectangle so as to further ~~correct~~ adjust at least one of ~~the~~ a longitudinal line width and a transverse line width of the resist pattern which is obtained from said mask ~~with~~ based on the optical proximity correction.

20. (Currently Amended) The method according to claim 18, wherein a ratio between a longer side and a shorter side of said rectangle is 1.1 or more.

21. (Currently Amended) The method according to claim 19, wherein a ratio between a longer side and a shorter side of said rectangle is 1.1 or more.

22. (Currently Amended) A method of exposure comprising the steps of:

illuminating a mask with a plurality of chip patterns through an illumination optical system, ~~having~~ including the steps of:

forming four substantially planar light sources at a predetermined plane orthogonal to ~~the~~ an illumination optical path of the illumination optical system in the vicinity of ~~the~~ a pupil of the illumination optical path; and

arranging said four planar light sources substantially at each ~~substantial~~ of vertices of a narrow rectangle whose barycenter is located on ~~the~~ an optical axis of the illumination optical path, wherein at least one of ~~the~~ a longer side of said narrow rectangle and a shorter side of said narrow rectangle is set based on a longer direction of said chip ~~pattern~~ patterns; and

projecting and transferring the chip patterns on ~~this~~ the mask onto a workpiece.

23. (Currently Amended) The method according to claim 22, wherein said illuminating ~~process having~~ also includes a step of setting the four planar light sources so as to

set a resist pattern to be transferred or a substrate pattern formed via a process to a predetermined size and a predetermined shape.

24. (Currently Amended) The method according to claim 22, wherein said mask ~~is provided with an~~ has been corrected by optical proximity correction, and the method further ~~comprising~~ comprises a step of changing the shape of said narrow rectangle so as to further ~~correct~~ adjust at least one of a longitudinal line width and a transverse line width of the resist pattern or the substrate pattern which is obtained from the mask ~~with~~ based on the optical proximity correction.

25. (Currently Amended) The method according to claim 22, wherein a ratio between the longer sides and the shorter sides of said rectangle is 1.1 or more.

26. (Currently Amended) An exposure apparatus comprising:

a light source;

an illumination optical system, arranged in an illumination optical path between said light source and a mask ~~with~~ having a pattern to be transferred, that illuminates the mask, and comprising a pupil shape forming unit which forms four substantially planar light sources at a predetermined plane orthogonal to the illumination optical path in the vicinity of ~~the~~ a pupil thereof; and

a projection optical system, arranged in an optical path between said mask and a workpiece, which projects and transfers the pattern of said mask onto the workpiece, and

wherein said pupil shape forming unit has a first illumination mode and a second illumination mode for arranging said four planar light sources,

in said first illumination mode, said four planar light sources are arranged substantially at each ~~substantial~~ of vertices of a narrow rectangle having a barycenter located on ~~the~~ an optical axis of the illumination optical path, longer sides of the narrow rectangle

arranged along a predetermined direction, and a ratio between the longer side and a shorter side of the narrow rectangle ~~of~~ is 1.1 or more, and

in second illumination mode, said four planar light sources are arranged substantially at each ~~substantial of~~ vertices of another narrow rectangle having a barycenter located on the optical axis, the shorter sides arranged along said predetermined direction, and a ratio between the shorter side and the longer side ~~of~~ is 1/1.1 or less.

27. (Currently Amended) The exposure apparatus according to claim 26, wherein the ratio between the longer side and the shorter side of said rectangle in said first illumination mode is 1.2 or more, and wherein the ratio between the shorter side and the longer side of said another rectangle in said second illumination mode is 1/1.2 or less.

28. (Currently Amended) The exposure apparatus according to claim 26, wherein a ratio σs between ~~the~~ respective numerical apertures of the four light beams from said four substantially planar light sources and ~~the~~ a numerical aperture on the mask side of said projection optical system is within the range of 0.1 and 0.3 inclusive.

29. (Currently Amended) The exposure apparatus according to claim 27, wherein a ratio σs between ~~the~~ respective numerical apertures of the four light beams from said four substantially planar light sources and ~~the~~ a numerical ~~apertures~~ aperture on the mask side of said projection optical system is within the range of 0.1 and 0.3 inclusive.

30. (Currently Amended) A method of exposure comprising the steps of:

illuminating a mask ~~with~~ having a pattern through an illumination optical system; and

projecting and transferring the pattern on the mask onto a workpiece,

wherein said illuminating step ~~comprising~~ comprises the steps of:

forming four substantially planar light sources at a predetermined plane orthogonal to ~~the~~ an illumination optical path in the vicinity of a pupil of the illumination optical system; and

arranging said four substantially planar light sources on said predetermined plane ~~as~~ is a first or second illumination mode,

in said first illumination mode, said four planar light sources are arranged substantially at each ~~substantial~~ of vertices of a narrow rectangle having a barycenter located on ~~the~~ an optical axis of the illumination optical path, longer sides of the narrow rectangle arranged along the predetermined direction, and a ratio between the longer sides and shorter sides ~~of~~ is 1.1 or more, and

in second illumination mode, said four planar light sources are arranged substantially at each ~~substantial~~ of vertices of another narrow rectangle having a barycenter located on the optical axis, the shorter sides arranged along said predetermined direction, and a ratio between the shorter sides and the longer sides ~~of~~ is 1/1.1 or more.

31. (Currently Amended) The method according to claim 30, wherein the ratio between the longer side and the shorter side of said rectangle in said first illumination mode is 1.2 or more, and wherein the ratio between the shorter side and the longer side of said another rectangle in said second illumination mode is 1/1.2 or less.

32. (Currently Amended) The method according to claim 30, wherein a ratio σs between ~~the~~ respective numerical apertures of the four light beams from said four substantially planar light sources and ~~the~~ a numerical ~~apertures~~ aperture on the mask side of the projection optical system is within the range of 0.1 and 0.3 inclusive.

33. (Currently Amended) The method according to claim 31, wherein ~~the~~ a ratio σs between ~~the~~ respective numerical apertures of the four light beams from said four

substantially planar light sources and ~~the~~ a numerical ~~apertures~~ aperture on the mask side of said projection optical system is within the range of 0.1 and 0.3 inclusive.

34. (Currently Amended) An exposure apparatus comprising:

a light source;

an illumination optical system, arranged in an illumination optical path between said light source and a mask ~~with~~ having a pattern to be transferred, which illuminates said mask; and

a projection optical system, arranged in an optical path between the mask and a workpiece, which projects and transfers the pattern of said mask ~~on~~ onto said workpiece,

wherein said illumination optical system comprises a pupil shape forming unit, arranged in ~~an~~ the illumination optical path, which forms four substantially planar light sources at a predetermined plane orthogonal to the illumination optical path in the vicinity of ~~the~~ a pupil thereof, and arranges said four substantially planar light sources substantially at each ~~substantial~~ of vertices of a narrow rectangle whose barycenter is located on ~~the~~ an optical axis ~~as~~ of the illumination optical path in first and second illumination modes,

in said first illumination mode, ~~one~~ a barycenter position of said four substantially planar light sources (r, θ) in polar coordinates whose origin is located at ~~illumination~~ the optical axis, and r is normalized with a pupil radius of the projection optical system as 1, ~~is satisfied~~ satisfies following conditions,

$$0.5 < r < 1 - rs$$

$$\sin^{-1}\{(rs)/(1 - rs)\} < \theta < \pi/4$$

where rs is the distance from the barycenter position of said one planar light source to the outermost circumferential edge, and

in said second illumination mode, ~~one~~ a barycenter position of said four substantially planar light sources (r, θ) in polar coordinates whose origin is located at ~~illumination~~ the optical axis, and r is normalized with a pupil radius of the projection optical system as 1, ~~is satisfied~~ satisfies following conditions,

$0.5 < r < 1 - rs$

$\pi/4 < \theta < \pi/2 - \sin^{-1}\{(rs)/(1 - rs)\}$.

35. (Original) The exposure apparatus according to claim 34, wherein said four substantially planar light sources are arranged with second-order rotational symmetry about a center of said optical axis on said predetermined plane.

36. (Currently Amended) A method of exposure comprising the steps of;

illuminating a mask ~~with~~ having a pattern through an illumination optical system; and

projecting and transferring the pattern on said mask onto a workpiece,

wherein said illuminating step ~~comprising~~ comprises the steps of:

forming four substantially planar light sources at a predetermined plane orthogonal to ~~the~~ an illumination optical path of the illumination optical system in the vicinity of ~~the~~ a pupil of the illumination optical path; and

arranging said four substantially planar light sources substantially at each ~~substantial~~ of vertices of a narrow rectangle whose barycenter is located on ~~the~~ an optical axis ~~as~~ of the illumination optical path in first and second illumination modes,

in said first illumination mode, ~~one~~ a barycenter position of said four substantially planar light sources (r, θ) in polar coordinates whose origin is located at ~~illumination~~ the optical axis, and r is normalized with a pupil radius of the projection optical system as 1, ~~is satisfied~~ satisfies following conditions,

$0.5 < r < 1 - rs$

$\sin^{-1} \{(rs)/(1 - rs)\} < \theta < \pi/4$

where rs is the distance from the barycenter position of said one planar light source to the outermost circumferential edge, and

in said second illumination mode, ~~one~~ a barycenter position of said four substantially planar light sources (r, θ) in polar coordinates whose origin is located at ~~illumination~~ the optical axis, and r is normalized with a pupil radius of the projection optical system as 1, ~~is satisfied~~ satisfies following conditions,

$0.5 < r < 1 - rs$

$\pi/4 < \theta < \pi/2 - \sin^{-1} \{(rs)/(1 - rs)\}$.

37. (Currently Amended) An illumination optical apparatus comprising:

an optical integrator arranged in an illumination optical path and forming a large number of light sources on the basis of a light beam supplied from a light source;

a guiding optical system arranged in an illumination optical path between the optical integrator and ~~a~~ an irradiated face and directing a light beam from said optical integrator to ~~an~~ the irradiated face;

a illumination field forming optical system, which includes a light beam converting element disposed in the optical path between said light source and said optical integrator and which converts the light beam from said light source to a light beam having a predetermined cross-sectional shape or a predetermined light intensity distribution, ~~forming a~~ and forms an illumination field ~~with~~ having a predetermined positional relationship with respect to said optical integrator in response to the light beam emitted from said light beam converting element;

a light splitting member disposed on the optical path between ~~said~~ a predetermined plane where the illumination field is formed and said light beam converting element;

a photoelectric converter element disposed on a substantial conjugate plane of said predetermined plane and receiving a light beam split by said light splitting member; and

a calculating unit, connected to said photoelectric converter element, and which determines a positional relationship between the light beam from said light source and said predetermined plane in response to the output of said photoelectric converter element.

38. (Original) The illumination optical apparatus according to claim 37, wherein said illumination field forming optical system further comprises a variable magnifying optical system which changes a size of the illumination field formed on said predetermined plane.

39. (Original) The illumination optical apparatus according to claim 37, wherein said illumination field forming optical system further comprises a first V-grooved axicon system having a ridge line extending in a first direction.

40. (Original) The illumination optical apparatus according to claim 39, wherein said illumination field forming optical system further comprises at least one of a conical axicon system having a conical refracting surface and a second V-grooved axicon system having a ridgeline extending in a second direction orthogonal to said first direction.

41. (Original) The illumination optical apparatus according to claim 37, wherein said light beam converting element comprises a plurality of diffractive optical elements which are removable and insertable in the illumination optical path.

42. (Original) The illumination optical apparatus according to claim 41, wherein at least one of said diffractive optical elements is used for an adjustment of said illumination optical apparatus.

43. (Original) The illumination optical apparatus according to claim 37, wherein said optical integrator has a wavefront dividing optical integrator with lens elements arrayed two-dimensionally, whose incident face is disposed at the position of said predetermined plane, or a position in the vicinity thereof.

44. (Currently Amended) An exposure apparatus comprising:

the illumination optical ~~device~~ apparatus according to claim 37; and

a projection optical system arranged in an optical path between a mask set on the irradiated face and an image surface of the mask and transferring the pattern of the mask onto a workpiece.

45. (Original) The exposure apparatus according to claim 44, further comprising a light beam adjusting unit disposed in the optical path between said light source and said beam splitting member and adjusting a position or direction of the light beam from said light source.

46. (Original) A method of manufacturing micro devices, comprising the steps of:

exposing the mask pattern onto a workpiece with the exposure apparatus according to claim 44; and

developing said workpiece which has been exposed by said exposing step.